

BIOBBOX AMMONIUM



Only by
dosing air



Without highly qualified
operating personnel.



Without polluting
waste.



Without adapted
specific facilities.

THE EQUIPMENT

BIOBBOX Ammonium offers **prefabricated plants** with over **90% efficiency** in ammonium removal from both **wastewater and drinking water**, providing an effective alternative to traditional solutions.

Available in container and skid formats, we tailor our solutions to meet different needs and flow rates, focusing on addressing challenges with **customized, sustainable** options. These unique systems on the market combine **engineering, automation, and proprietary technology**, ensuring both efficiency and profitability.

Let us assess your situation and help you transform your water treatment with the most advanced innovation and technology. Lead the change with cutting-edge, innovative solutions!

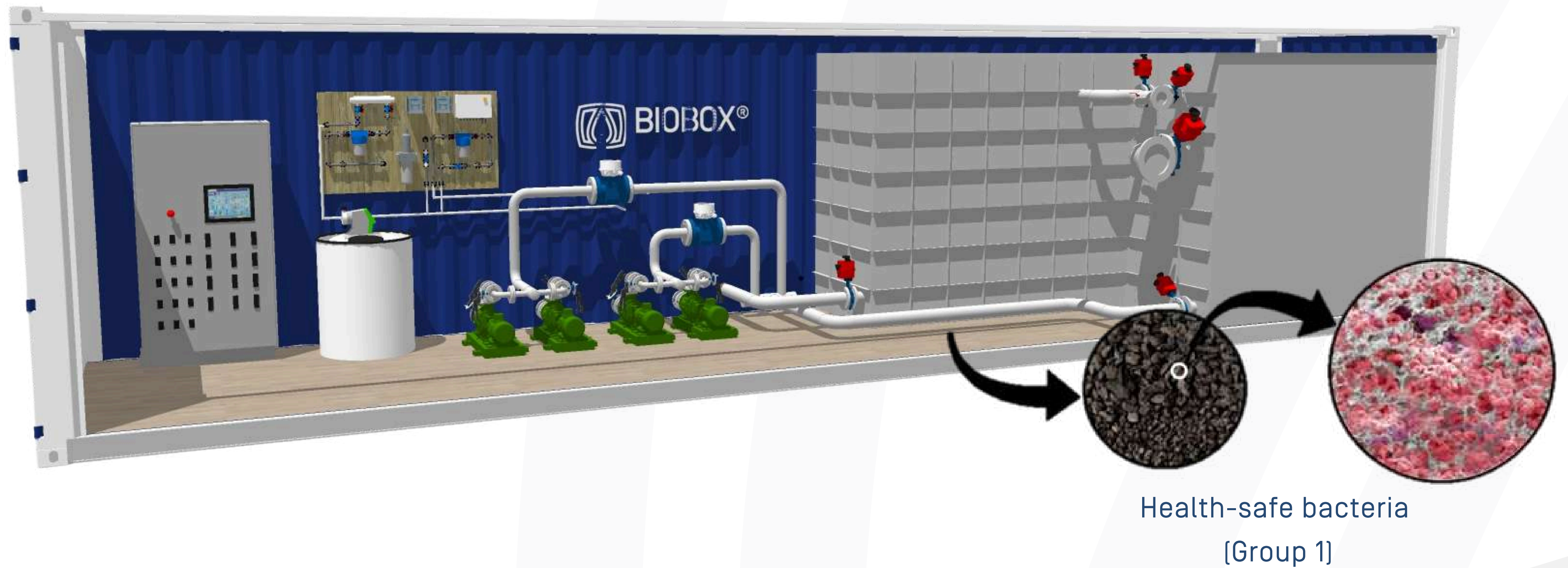


THE TECHNOLOGY

BIOBOX Ammonium integrates **proprietary technology** that uses the natural action of bacteria (safe and harmless Group 1 bacteria for health) to completely eliminate the contaminant, without generating harmful waste that is difficult to manage.

Container format:

Example of a complete plant with integrated fine filtration and disinfection.



“The same process that occurs in nature,
intensified and automated”

Modular / skid format:

Approximate minimum flow rate of 5m³/h

**Cases outside this range are under study.*

- ☒ Drinking Water
- ☒ Wastewater



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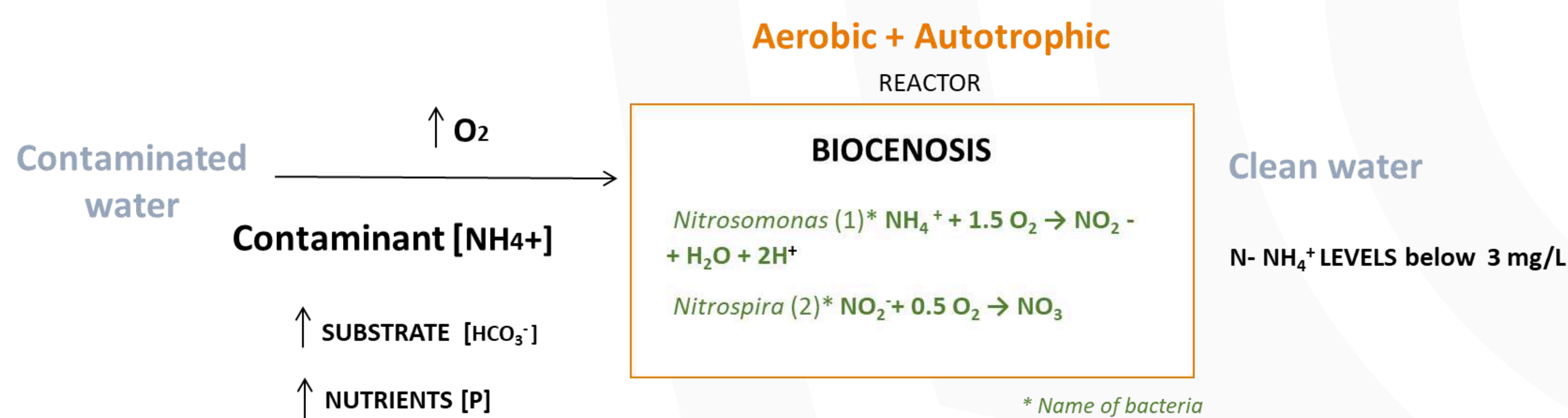
SPECIFIC FEATURES OF BIOBOX® AMMONIUM



Technology	
Effectiveness	>90% ammonium removal
Chemical dosing	No / Natural activity of the bacteria
Flow rate	Adapted to various needs and flow rates / Capable of treating variable concentrations.
Waste	No difficult-to-manage waste.
Removal of other contaminants.	Optimizes the entire treatment process / Synergies with other steps and removal of additional contaminants / Capable of eliminating other contaminants.
Energy consumption	Low / Natural activity of the bacteria
OPEX / CAPEX	Lower operating and investment costs.
Bacteria	Safe and harmless to health (Group 1).

“Proprietary engineering and process
effective solutions tailored to your needs”

We replicate the same process as nature, but intensified and automated

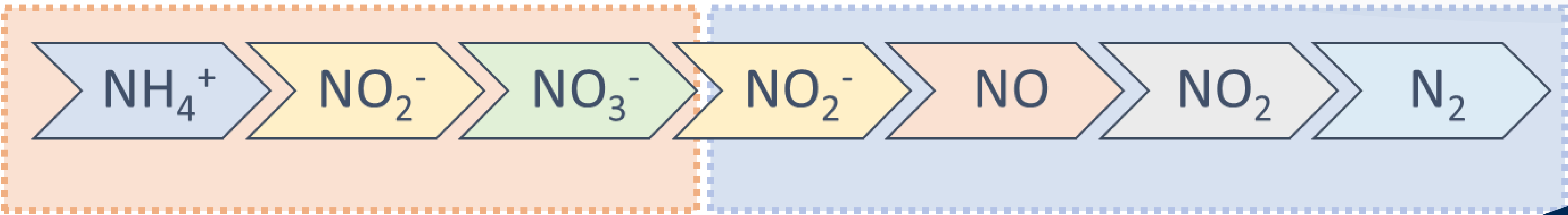


Graph 1: BIOBOX Ammonium Process

Complete removal.
When necessary

Nitrification

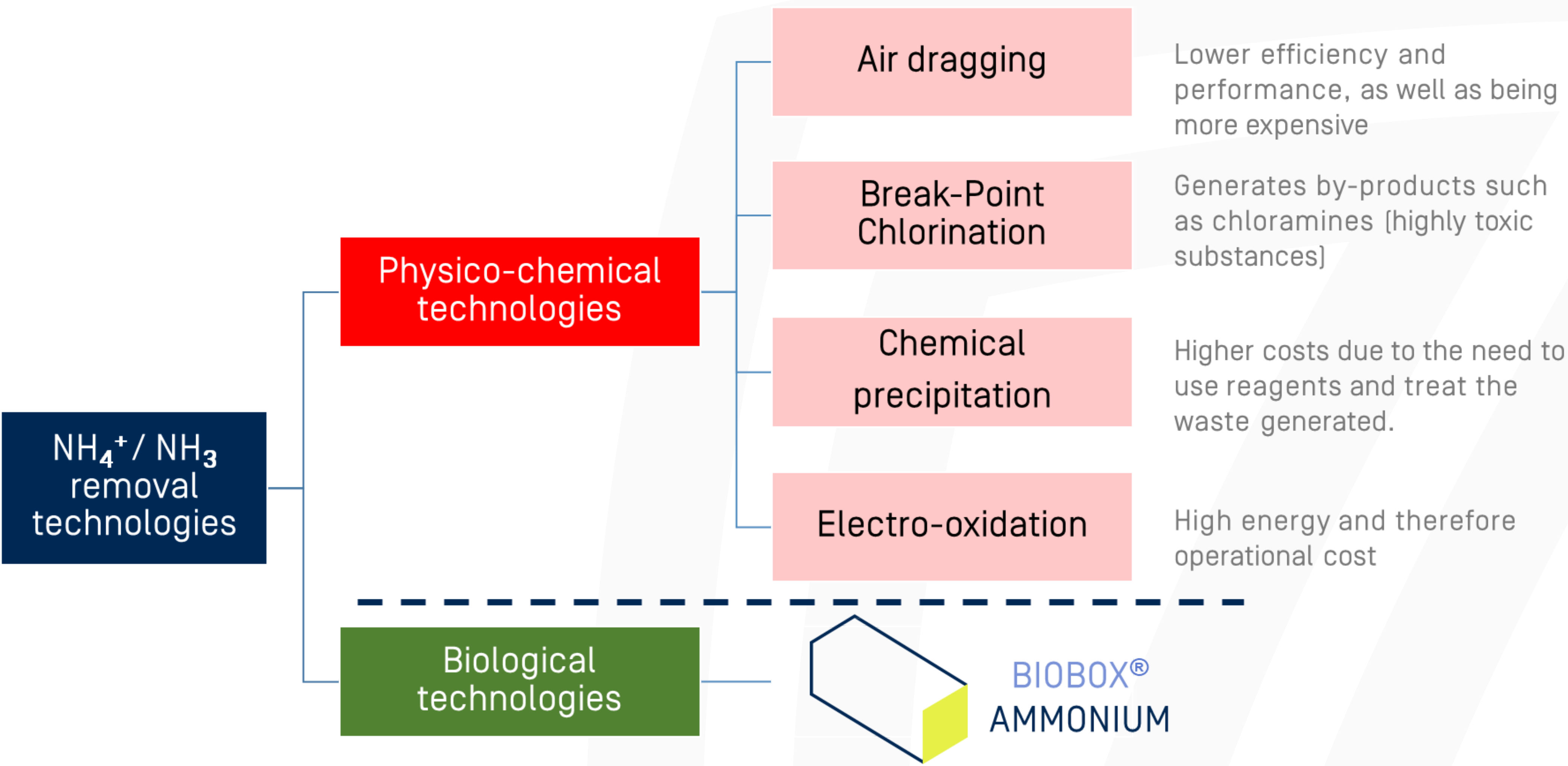
Denitrification



Graph 2: Nitrification and Denitrification Process

MARKET ALTERNATIVES

In drinking water treatment, there are two main technologies for ammonium removal: physicochemical technologies and biological technologies.



Graph 3: Comparison of technologies for ammonium removal from water

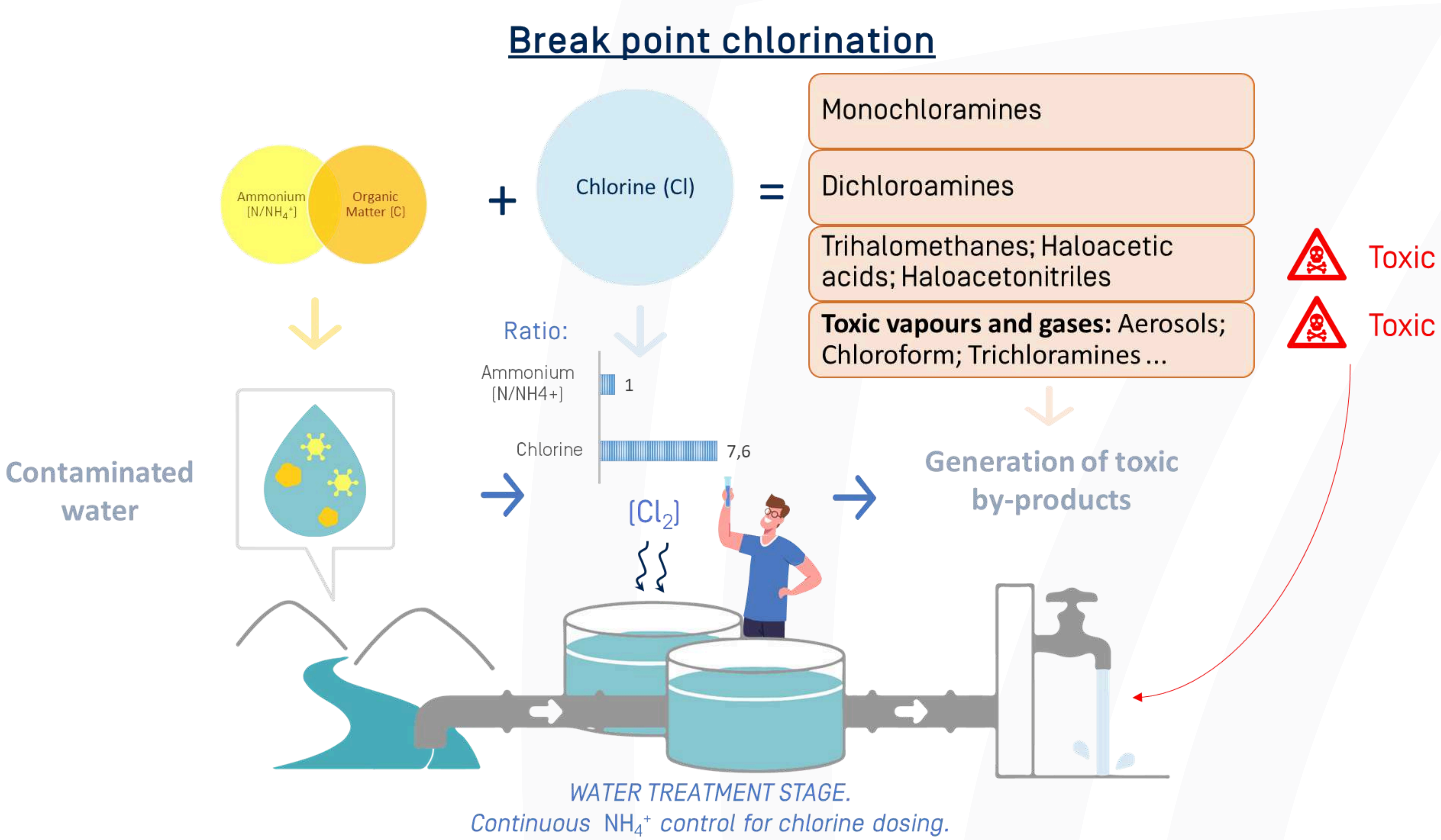
This table compares the solution offered with the most commonly used traditional technologies in the market.

	TREATMENT	INVESTMENT COST	ELIMINATION OF THE POLLUTANT	WASTE GENERATED	OPERATING COST	DISADVANTAGES
AIR DRAGGING	REAGENTS ARE ADDED TO RAISE THE PH	HIGH	COMPLETE	THE ACTIVATED CHARCOAL IS USED TO ABSORB IT	HIGH	EXPENSIVE: WASTE MANAGEMENT, HIGH ENERGY COSTS. WATER MUST BE PUMPED BACK. COST OF ABSORBENT MATERIAL.
BREAK-POINT CHLORINATION	CHLORINE IS ADDED	MEDIUM	PARTIAL	CHLORINATION BY-PRODUCTS	HIGH	GENERATES HIGHLY TOXIC BY-PRODUCTS
CHEMICAL PRECIPITATION	REAGENTS ARE ADDED	MEDIUM	PARTIAL	TRANSFORMS IT INTO PARTIALLY SOLUBLE SALTS THAT HAVE TO BE ELIMINATED	VERY HIGH	COSTLY: NEED TO USE REAGENTS. WASTE HAS TO BE MANAGED.
ELECTRO-OXIDATION	AN ELECTRIC CURRENT IS PASSED THROUGH WATER	HIGH	COMPLETE	REMOVES IT (NITROGEN GAS HARMLESS)	VERY HIGH	HIGH ENERGY AND OPERATIONAL COSTS
BIOBOX [®] AMMONIUM	NATURAL TREATMENT OF BACTERIA	MEDIUM	COMPLETE	REMOVES IT (NITROGEN GAS HARMLESS)	ECONOMICAL AND EFFICIENT	INNOVATIVE TECHNOLOGY ON THE MARKET

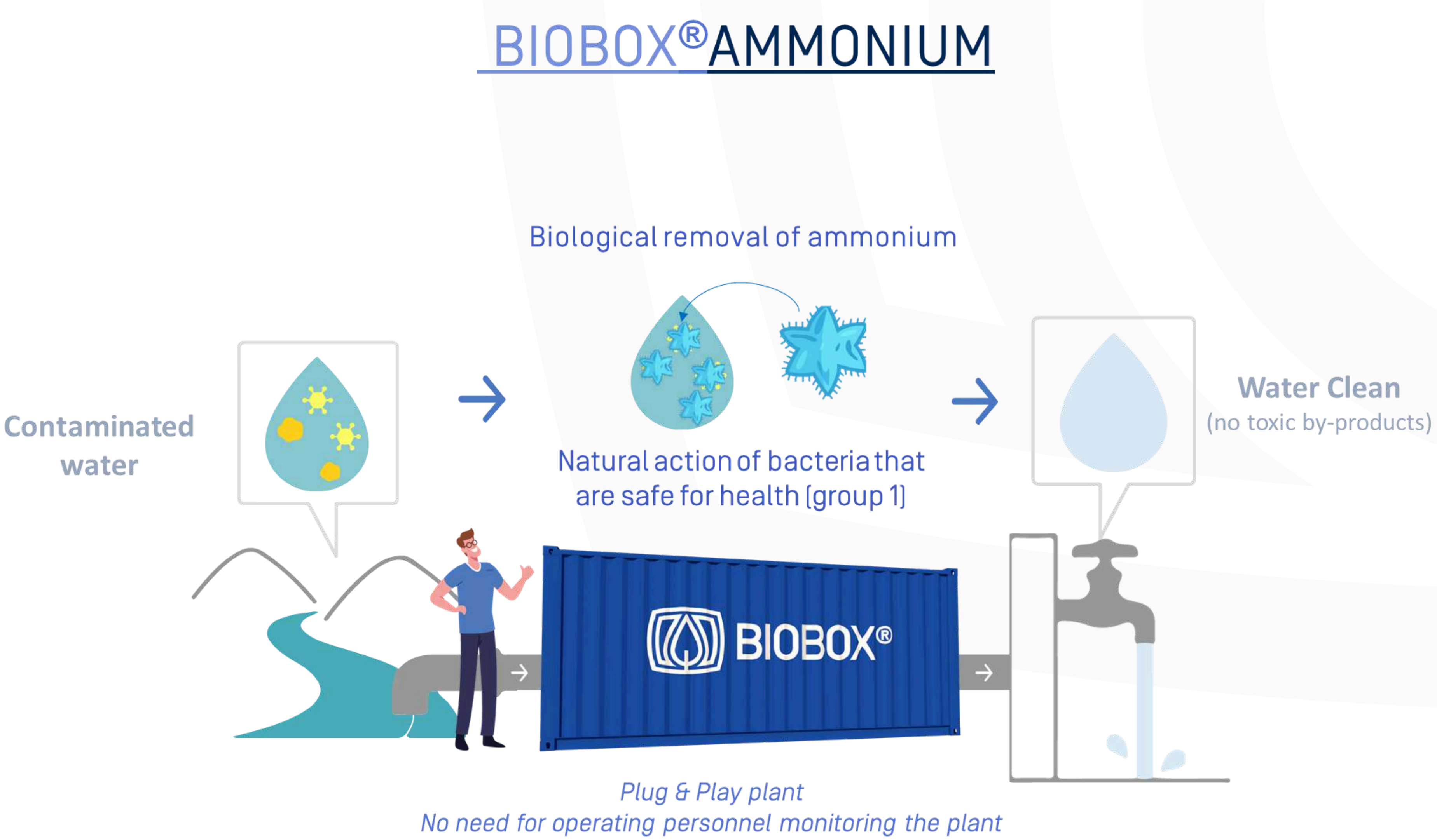
Table 1: Comparison of technologies for ammonium removal from water

MARKET ALTERNATIVES

In drinking water treatment, there are two main technologies for ammonium removal: physicochemical technologies and biological technologies.



Graph 4: Breakpoint Chlorination



Graph 5: BIOBOX Ammonium Process

BIOBOX PROJECTS

Wastewater treatment plant in Cabildo (Valparaíso, Chile)

Date:

2023 - 2024

Treated water:

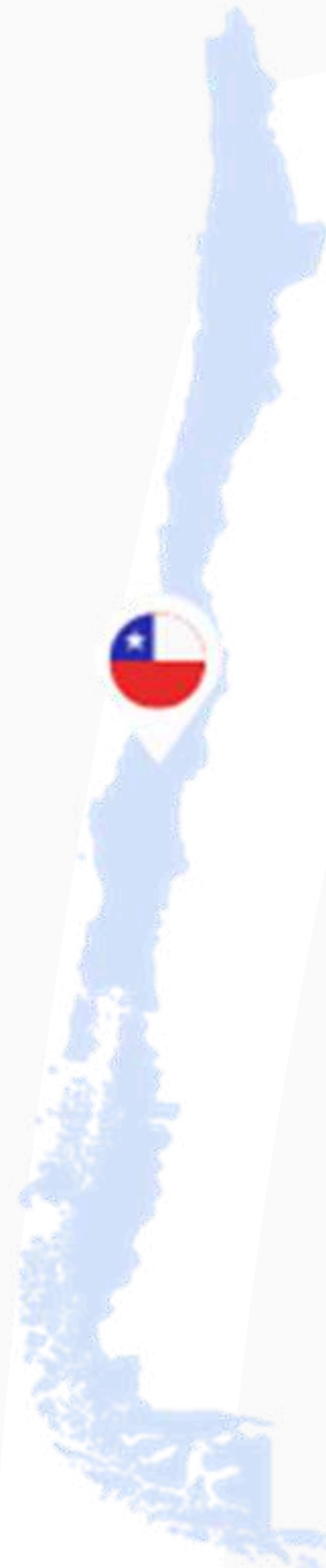
Wastewater

Technology used

BIOBOX® Ammonium

Plant features:

- **Treatment:** Wastewater
- **Technology:** BIOBOX Ammonium
- **Flow rate** :44-52 GPM / 10-12 m³/h
- **Influent N-NH₄⁺**: 54 mg/L (**NH₄⁺** 70mg/L)
- **Effluent N-NH₄⁺** : <7 mg/L (**NH₄⁺** : <10 mg/L)



Nitrogen and phosphorus removal project through biological means (Mining exploitation, Zamora-Chinchipe region, Ecuador)

LUNDINGOLD

Fecha:

2021

Agua tratada:

Agua Residual

Tecnología empleada

BIOBOX® Nitratos

BIOBOX® Amonio

BIOBOX® Fósforo

Características de la planta:

- **Influent:** Wastewater
- **Technology:** BIOBOX Nitrate; BIOBOX Ammonium; BIOBOX Phosphorus
- **Flow rate:** 31 GPM / 7 m³/h
- **Influent N-NO₃**: 90 / (**NO₃** : 400 mg/L)
- **Influent N-NH₄⁺**: 47 / (**NH₄⁺**: 60 mg/L)
- **Effluent Total N:** <10 mg/L
- **Phosphorus input:** 8 mg/L
- **Phosphorus output:** <2 mg/L



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PROYECTOS BIOBOX

Pilot project for ammonium removal at the Pelayos de la Presa WTP, Canal de Isabel II (Madrid, Spain)



Date:

2021 - 2022

Treated water:

Drinking Water

Technology used

BIOBOX® Ammonium



Características de la planta:

- **Influent:** San Juan Reservoir
- **Technology :** BIOBOX Ammonium
- **Flow rate :** 1GPM / 0,24 m³/h
- **Influent N-NH₄⁺:** 1-3 mg/L / NH₄⁺ 2-4 mg/L
- **Effluent N-NH₄⁺ :** <0,39 mg/L / NH₄⁺ <0,5 mg/L

GENERAL FEATURES OF BIOBOX®

Automation, operation, and maintenance of the plant.



Monitoring	Monitorización de parámetros clave y control remoto 24/7 / Seguridad y tranquilidad al cliente
Operating mode	100% automated with real-time visualization / Remote control
Mantenimiento	No need for continuous operational staff / Alert and notification system / Training for operation and maintenance upon project completion
Conexiones sistema	Secure and confidential system / Adaptation to the client's operating system upon commissioning completion / Removal of BIOBOX access, if desired.

Plant design



Prefabricated	Plants built and delivered pre-assembled / Minimization of execution and commissioning times / Avoidance of inconveniences / Cost savings.
Large-scale civil works	No large-scale on-site civil works required.
Space	We minimize the required space.
Customization	Custom-made plants / Optimization of technology, investment, and operating costs.
Experience	Design by water treatment experts / Over 25 years of experience / Full water cycle control
Guarantees	We guarantee optimal results and compliance with parameters / We do not leave a project until it is achieved.



Technology

Unique	Technology developed in our R&D center / Requirement to be better and more sustainable than market technologies for commercial launch.
Know - how	Deep process knowledge / Technology developers



Support:

Problem solving	Ability to solve any problem / Investigation of unknown situations.
Direct contact	Close and direct collaboration / Flexibility / 360° approach at every phase of the project.
Partner network	Agreements with 2 multinational companies and 4 local businesses in the United States, Chile, New Zealand, Spain, and Portugal.
Optional elements	Technical advice / Post-sales support